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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,936	08/07/2001	Raj N. Master	52352-483	9521

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Washington, DC 20005-3096

EXAMINER

PITTMAN, ZIDIA T

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 02/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/922,936

Applicant(s)

MASTER ET AL.

Examiner

Zidia Pittman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 1/21/03.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18, 22-24 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 18, 22-24, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Brownfield et al (USPN 2006/0399,902).

Brownfield et al teaches an inline flux measurement system. The apparatus comprises two main components, a controller and a scale means for measuring the weight of a IC component to which the flux is to be applied. The controller is a computer that is capable of computing data from feedback from the scale measuring means. The IC component could be a flip-chip die having solder bumps or a packaging substrate with conductive traces to which the solder bumps are bonded. The controller accepts the signal from the scale means and computes the volume amount of flux to be dispensed on the IC component. A signal is sent from the controller through line to a

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liquid flow controller. The signal causes the LFC to open allowing flux from storage container to move through pipes and to spray nozzle. The flux dispensing means can be a flux needle. The controller can be preset to dispense a specific volume of flux or preset to dispense flux based on a specific change in weight of the IC component. (col. 2, l. 58 – col. 3, l. 38)

With respect to the limitations requiring the data processing device adapted for controlling valve pressure in a range between about 1.5 and 30 psi, flux viscosity in a range between about 10 and 150 centipoises, and flux spray pattern based on a configuration of the substrate and an arrangement pattern of conductive terminals and controls movement of the flux dispense nozzle in at least two dimensions relative to the substrate and decides a plurality of subsets based on the configuration of the substrate and the arrangement pattern of conductive terminals thereon, each subset comprising a plurality of conductive terminals closely located to each other, wherein the substrate is a printed circuit board or a flip-chip type electrical component and the plurality of conductive terminals are flip-chip pads or bumps arranged on the printed circuit board or flip-chip type electrical component, it is the examiner's position that these limitations do not further limit the structural aspects of the apparatus. Furthermore, the reference need only teach the structural limitations of the apparatus with those limitations capable of performing the functions indicated. Brownfield et al teaches the structural limitations required by the claims as indicated above.

Claims 18, 22, 23, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Hogan et al (USPN 6,265,017).

Hogan et al teaches a control system for applying solder flux to a printed circuit. There is shown a system for applying a flux coating to a substrate such as a circuit board. A spray gun having a nozzle is disposed within coating chamber and emits a liquid spray pattern from nozzle. A control system is operatively connected to spray gun for intermittently pulsing gun on and off to coat overlapping sections of the undersurface of circuit board in response to circuit board moving a predetermined distance through coating chamber. (col. 3, l. 42-56; col. 5, l. 48 – col. 6, l. 13)

With respect to the limitations requiring the data processing device adapted for controlling valve pressure in a range between about 1.5 and 30 psi, flux viscosity in a range between about 10 and 150 centipoises, and flux spray pattern based on a configuration of the substrate and an arrangement pattern of conductive terminals and controls movement of the flux dispense nozzle in at least two dimensions relative to the substrate and decides a plurality of subsets based on the configuration of the substrate and the arrangement pattern of conductive terminals thereon, each subset comprising a plurality of conductive terminals closely located to each other, wherein the substrate is a printed circuit board or a flip-chip type electrical component and the plurality of conductive terminals re flip-chip pads or bumps arranged on the printed circuit board or flip-chip type electrical component, it is the examiner's position that these limitations do not further limit the structural aspects of the apparatus. Furthermore, the reference need only teach the structural limitations of the apparatus with those limitations capable of performing the functions indicated. Hogan et al teaches the structural limitations required by the claims as indicated above.

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***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Allowable Subject Matter***

Claims 25 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or suggest an apparatus for dispensing flux as recited, particularly wherein the flux needle has a diameter range between about 0.1 and 0.6 mm and a needle opening having a diameter range between about 5 and 60 microns.

### ***Response to Arguments***

Applicant's arguments with respect to claims 18, 22-24, and 27--30 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Messerly et al (USPN 6,253,957) and Nielsen (USPN 5,989,638) are cited as of interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zidia Pittman whose telephone number is (703) 305-1248. The examiner can normally be reached on Monday – Thursday and alternate Fridays from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn, can be reached at (703) 308-3318. The official fax phone

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number for the organization where this application or proceeding is assigned is (703)

305-7718. The unofficial fax number for art unit 1725 is (703) 305-6078.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*znp*

02/19/03

*Tom Dunn*

TOM DUNN  
SUPERVISORY PATENT EXAMINER  
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